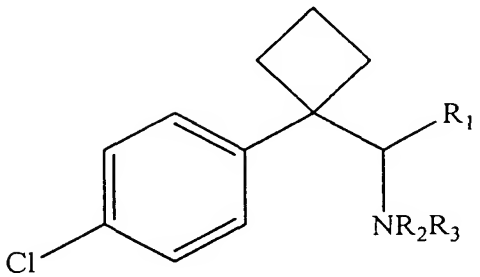
CLAIMS

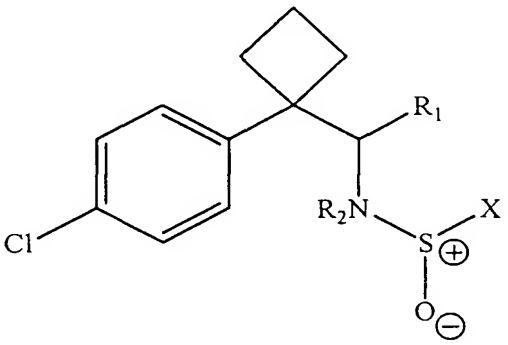
What is claimed is:

1. A method of preparing a compound of Formula 1:



(1)

or a pharmaceutically acceptable salt, solvate, clathrate, hydrate, or prodrug thereof, wherein R_1 is substituted or unsubstituted alkyl, substituted or unsubstituted aralkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted aryl, substituted or unsubstituted heterocycle; and R_2 and R_3 together form a cyclic structure or each of R_2 and R_3 is independently substituted or unsubstituted alkyl, substituted or unsubstituted aralkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted aryl, substituted or unsubstituted heterocycle, which comprises contacting a compound of Formula 2:



(2)

wherein X is independently a polymer bound alkyl, aryl or heteroalkyl; substituted or unsubstituted alkyl; substituted or unsubstituted aralkyl; substituted or unsubstituted heteroalkyl; substituted or unsubstituted aryl; substituted or unsubstituted ether; substituted or unsubstituted ester; substituted or unsubstituted ketone; substituted or unsubstituted phosphonate; substituted or unsubstituted phosphonic acid ester; substituted or unsubstituted phosphinoyl; substituted or unsubstituted sulfide; substituted or unsubstituted sulfone; substituted or unsubstituted sulfinyl imine; substituted or unsubstituted heterocycle; or $-NR_4R_5$, wherein R_4 and R_5 together with the nitrogen atom to which they are attached form

a heterocycle or each of R_4 and R_5 is independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted aralkyl, substituted or unsubstituted aryl, substituted or unsubstituted ether, substituted or unsubstituted sulfide, or substituted or unsubstituted heterocycle; with a reagent capable of cleaving a nitrogen-sulfur bond under conditions suitable for the formation of the compound of Formula 1.

2. The method of claim 1 wherein the compounds of formulas 1 and 2 are stereomerically pure.

3. The method of claim 1 wherein the compound of Formula 1 is provided as a pharmaceutically acceptable salt.

4. The method of claim 3 wherein the compound of Formula 1 is provided as an acetic, benzenesulfonic, benzoic, camphorsulfonic, citric, ethenesulfonic, fumaric, gluconic, glutamic, hydrobromic, hydrochloric, isethionic, lactic, maleic, malic, mandelic, methanesulfonic, mucic, nitric, pamoic, pantothenic, phosphoric, succinic, sulfuric, tartaric, or p-toluenesulfonic salt.

5. The method of claim 1 wherein R_1 is lower alkyl, optionally substituted with one or more hydroxyl groups.

6. The method of claim 5 wherein R_1 is $-CH_2CH(CH_3)(CH_2OR_4)$, $-CH(OCH_2OCH_3)CH(CH_3)_2$, $-CH_2CH(CH_3)_2$, $-CH_2C(CH_3)_2OR_4$, or $-CH_2C(OR_4)(CH_2OR_4)CH_3$, wherein R_4 is alkyl, heteroalkyl, heteroaryl, aryl, hydrogen, acyl, carbonate, carbamate, ester, or urea.

7. The method of claim 1 wherein R_2 is not the same as R_3.

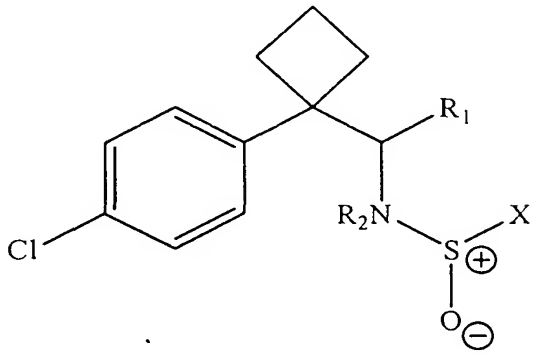
8. The method of claim 1 wherein R_2 and R_3 are both hydrogen.

9. The method of claim 1 wherein X is substituted or unsubstituted aralkyl, substituted or unsubstituted heterocylce, substituted or unsubstituted heteroalkyl, or substituted or unsubstituted heteroaryl.

10. The method of claim 1 wherein X is alkyl.

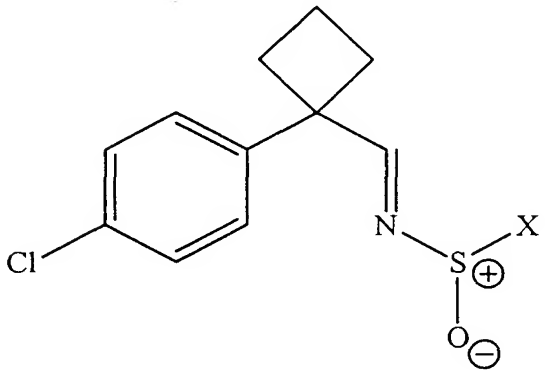
11. The method of claim 1 wherein X is aryl.

12. A method of preparing a compound of Formula 2:



(2)

which comprises contacting a compound of Formula 3:

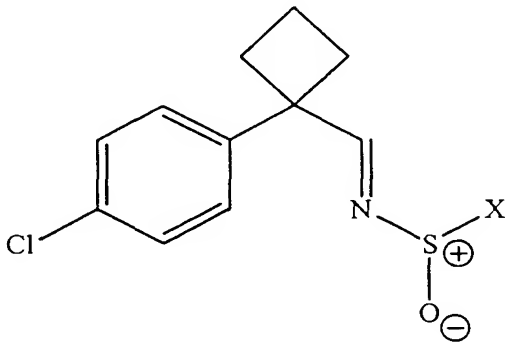


(3)

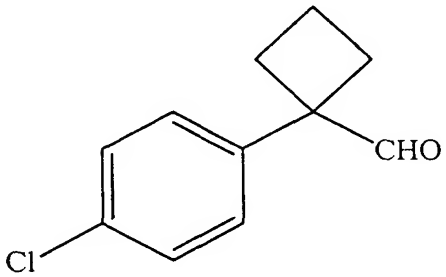
with a Lewis acid or a base and a compound of the formula R_1M, wherein X is independently a polymer bound alkyl, aryl or heteroalkyl; substituted or unsubstituted alkyl; substituted or unsubstituted aralkyl; substituted or unsubstituted heteroalkyl; substituted or unsubstituted aryl; substituted or unsubstituted ether; substituted or unsubstituted ester; substituted or unsubstituted ketone; substituted or unsubstituted phosphonate; substituted or unsubstituted phosphonic acid ester; substituted or unsubstituted phosphinoyl; substituted or unsubstituted sulfide; substituted or unsubstituted sulfone; substituted or unsubstituted sulfinyl imine; substituted or unsubstituted heterocycle; or $-NR_4R_5$, wherein R_4 and R_5 together with the nitrogen atom to which they are attached form a heterocycle or each of R_4 and R_5 is independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted aralkyl, substituted or unsubstituted aryl, substituted or unsubstituted ether, substituted or unsubstituted sulfide, or substituted or

unsubstituted heterocycle; and M is CdZ, BaZ, Na, K, MgZ, ZnZ, Li, MnZ, CuZ, TiZ_3, or In, and Z is Cl, Br, I, aryl, aralkyl, alkoxy, or heterocycle under conditions suitable for the formation of the compound of Formula 2.

13. A method of preparing a compound of Formula 3:

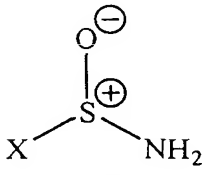


which comprises contacting a compound of Formula 4:



(4)

with a compound of Formula 5:



(5)

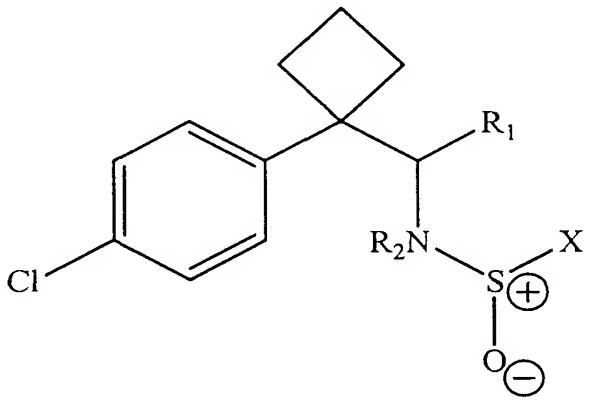
wherein X is independently a polymer bound alkyl, aryl or heteroalkyl; substituted or unsubstituted alkyl; substituted or unsubstituted aralkyl; substituted or unsubstituted heteroalkyl; substituted or unsubstituted aryl; substituted or unsubstituted ether; substituted or unsubstituted ester; substituted or unsubstituted ketone; substituted or unsubstituted phosphonate; substituted or unsubstituted phosphonic acid ester; substituted or unsubstituted phosphinoyl; substituted or unsubstituted sulfide; substituted or unsubstituted sulfone; substituted or unsubstituted sulfinyl imine; substituted or unsubstituted heterocycle; or

$-NR_4R_5$, wherein R_4 and R_5 together with the nitrogen atom to which they are attached form a heterocycle or each of R_4 and R_5 is independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted aralkyl, substituted or unsubstituted aryl, substituted or unsubstituted ether, substituted or unsubstituted sulfide, or substituted or unsubstituted heterocycle; under conditions suitable for the formation of the compound of Formula 3.

14. The method of claim 13 wherein the compound of Formula 5 is stereomerically pure.

15. The method of claim 13 wherein the compound of Formula 5 is (R)-*tert*-butylsulfinamide, (S)-*tert*-butylsulfinamide, (R)-triethylmethylsulfinamide, or (S)-triethylmethylsulfinamide.

16. A compound of Formula 2:



or a salt, solvate, clathrate, hydrate, or prodrug thereof, wherein each of X is independently a polymer bound alkyl, aryl or heteroalkyl; substituted or unsubstituted alkyl; substituted or unsubstituted aralkyl; substituted or unsubstituted heteroalkyl; substituted or unsubstituted aryl; substituted or unsubstituted ether; substituted or unsubstituted ester; substituted or unsubstituted ketone; substituted or unsubstituted phosphonate; substituted or unsubstituted phosphonic acid ester; substituted or unsubstituted phosphinoyl; substituted or unsubstituted sulfide; substituted or unsubstituted sulfone; substituted or unsubstituted sulfinyl imine; substituted or unsubstituted heterocycle; or $-NR_4R_5$, wherein R_4 and R_5 together with the nitrogen atom to which they are attached form a heterocycle or each of R_4 and R_5 is independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted aralkyl, substituted or unsubstituted aryl, substituted

or unsubstituted ether, substituted or unsubstituted sulfide, or substituted or unsubstituted heterocycle; and R_1 is independently substituted or unsubstituted alkyl; substituted or unsubstituted aralkyl; substituted or unsubstituted heteroalkyl; substituted or unsubstituted aryl; and R_2 is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted aralkyl, or substituted or unsubstituted aryl.

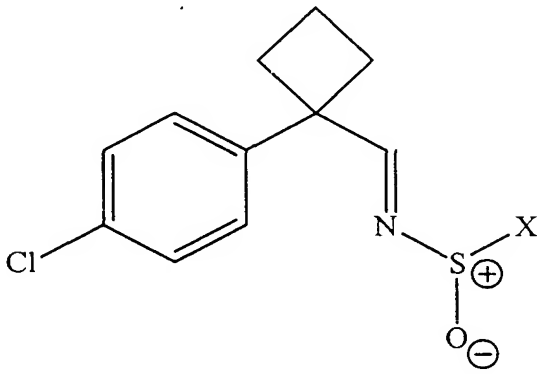
17. The compound of claim 16 wherein R_1 is lower alkyl, optionally substituted with one or more hydroxyl groups.

18. The compound of claim 17 wherein R_1 is $-CH_2CH(CH_3)(CH_2OR_4)$, $-CH(OCH_2OCH_3)CH(CH_3)_2$, $-CH_2CH(CH_3)_2$, $-CH_2C(CH_3)_2OR_4$, or $-CH_2C(OR_4)(CH_2OR_4)CH_3$, wherein R_4 is alkyl, aryl, H, acyl, carbonates, carbamates, and ureas.

19. The compound of claim 16 wherein X is alkyl.

20. The compound of claim 16 wherein X is substituted or unsubstituted aryl.

21. A compound of Formula 3:



(3)

or a salt, solvate, clathrate, hydrate, or prodrug thereof, wherein X is substituted or unsubstituted alkyl, substituted or unsubstituted aralkyl, or substituted or unsubstituted aryl.

22. The compound of claim 21 wherein X is alkyl.

23. The compound of claim 21 wherein X is substituted or unsubstituted aryl.

24. The compound of claim 16 or 21 wherein said compound is stereomerically pure.

25. The method of claim 2 or 13 wherein the desired stereoisomer is greater than about 90 percent pure.